

# EUROPEAN PATENT OFFICE

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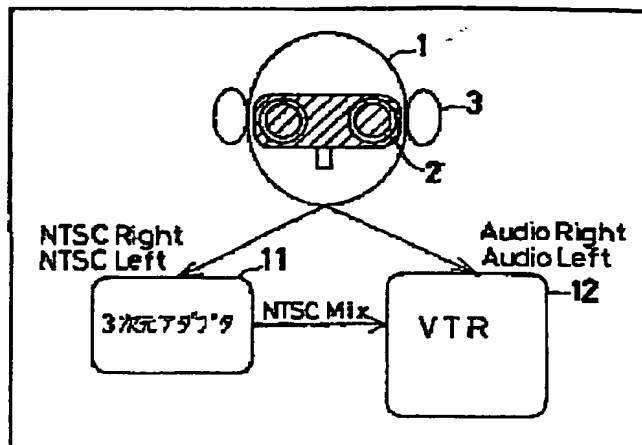
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TITLE : HEAD MOUNTING TYPE VIDEO AND  
AUDIO SIMULTANEOUS  
THREE-DIMENSIONAL RECORDING  
SYSTEM



**ABSTRACT :** **PURPOSE:** To record video and sound simultaneously and stereoscopically so that the same presence with an actual site can be obtained by fitting a three- dimensional camera and dummy head microphones at positions corresponding to the eyes and ears of a human being, and simultaneously and three-dimensional performing stereoscopic video recording and binaural sound recording.

**CONSTITUTION:** A dummy head 1 is so constituted as to perform the stereoscopic video recording and binaural sound recording from the human-oriented view point. For that purpose, the cameras 2 are fitted at the positions of the right and left eyes of a head 1 modeled on the head and face of the human being and the dummy head microphones 3 are fitted at the positions of the right and left ears; and they are integrated to constitute the system. The cameras 2 are fitted at the positions of the right and left eyes so as to obtain a parallax and consist of three-dimensional cameras which take pictures alternately in cycles enabling continuous recognition by means of the after image phenomenon, e.g. 20 cycles, and record images on a magnetic tape, etc. This constitution enables the simultaneous stereoscopic video recording and binaural sound recording.

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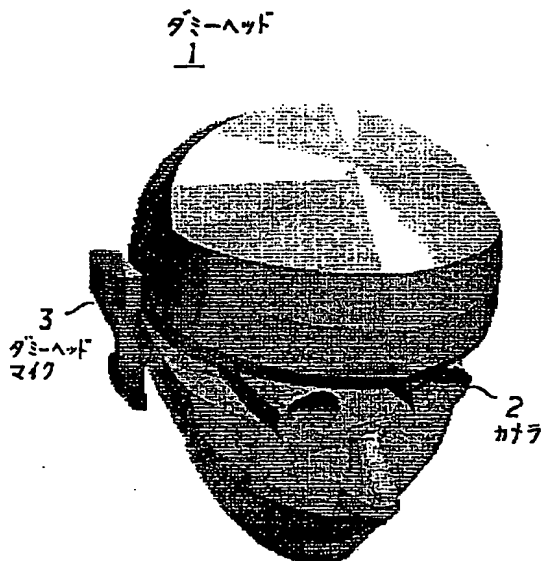
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(54) 【発明の名称】 ヘッド型映像・音響同時立体収録システム

(57) 【要約】

【目的】 映像と音響の同時立体収録を可能にする。

【構成】 人間の顔、頭部に似せたダミーヘッドの左右の眼の位置に少なくとも角度調節可能に3次元カメラを、左右の耳の位置にダミーヘッドマイクをそれぞれ取り付け、3次元カメラで立体映像を、ダミーヘッドマイクで音響を同時収録するようにしたことを特徴とする。



## 【特許請求の範囲】

【請求項1】 人間の顔、頭部に似せたダミーヘッドの左右の眼の位置に少なくとも角度調節可能に3次元カメラを、左右の耳の位置にダミーヘッドマイクをそれぞれ取り付け、3次元カメラで立体映像を、ダミーヘッドマイクで音響を同時収録するようにしたことを特徴とするヘッド型映像・音響同時立体収録システム。

【請求項2】 請求項1記載のシステムにおいて、映像と音響を、1VTR方式、または2VTR方式で収録することを特徴とするヘッド型映像・音響同時立体収録システム。

## 【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明はヘッド型映像・音響同時立体収録システムに関するものである。

【0002】

【従来の技術】 現在のメディアテクノロジー、映像や音響の提示方式は、ハイビジョンやDAT (Digital Audio Tape) などの質的向上を図る方向性とともに、より人間の知覚に近い提示方式 (立体提示) に注目が集まっている。こういった指向をもったテクノロジーは、バーチャルリアリティと総称され、一般に定着しつつある。ほとんどの遊園地やテーマパークに、立体提示技術を用いたエキジビションを見つけることができるのは、プレゼンテーションやデモンストレーションに立体提示技術を用いるのが標準となってきたためと言える。

【0003】

【発明が解決しようとする課題】 しかし、提示技術は急速に進歩しているが、ソフトを制作するためには、非常に高価で特殊な収録機材を用いなければならないのが現状である。映像だけ立体収録できる3次元カメラ、音響だけ立体収録できるダミーヘッドマイクは存在するものの、これまでその場に居るのと等しい臨場感が得られるように映像および音響を同時に立体収録できるシステムはない。

【0004】 本発明は上記課題を解決するためのもので、その場に居るのと等しい臨場感が得られるように映像と音響の同時立体収録が可能なヘッド型映像・音響同時立体収録システムを提供することを目的とする。

【0005】

【課題を解決するための手段】 そのために本発明のヘッド型映像・音響同時立体収録システムは、人間の顔、頭部に似せたダミーヘッドの左右の眼の位置に少なくとも角度調節可能に3次元カメラを、左右の耳の位置にダミーヘッドマイクをそれぞれ取り付け、3次元カメラで立体映像を、ダミーヘッドマイクで音響を同時収録するようにしたことを特徴とする。

【0006】

【作用】 本発明は人間の左右の眼に対応する位置に3次

元カメラを、左右の耳に対応する位置にマイクをそれぞれ取り付け付けたダミーヘッドにより、立体録画とバイノーラル録音を同時立体収録するようにしたので、その場に居るのと等しい臨場感が得られ、より洗練された、完成度の高いリアリティの演出が可能となる。

【0007】

【実施例】 図1は本発明の一実施例であるダミーヘッドの概念図、図2は1VTR収録方式のシステム構成を説明するブロック図、図3は1VTR収録方法を説明する図、図4は液晶シャッター付きメガネを説明する図である。図中、1はダミーヘッド、2はカメラ、3はダミーヘッドマイクである。ダミーヘッド1は人間中心の視点から立体録画とバイノーラル録音を行うようにしたものであり、そのため人間の頭部、顔に似せて作製されたヘッド1の左右の眼の位置にはカメラ2が、左右の耳の位置にはダミーヘッドマイクが取付けられ、これらを一体化させたシステムとなっている。

【0008】 カメラ2は視差を与えるために左右の眼の位置に設けられ、残像現象により連続的に認識できるように周期、例えば20サイクルで左右を切り換えて撮影し、磁気テープ等に記録する3次元カメラからなっている。また、ダミーヘッドマイクは左右の耳の位置に設けられてバイノーラル録音できるようになっている。

【0009】 収録方式としては、1VTRと2VTRがある。1VTRは、図2に示すように、ダミーヘッド1の左右のカメラ2で撮影して左右のNTSC方式のビデオ信号を得るとともに、左右のダミーヘッドマイク3からオーディオ信号を得る。そして、ビデオ信号を3次元アダプター11を介してオーディオ信号と同期させ、1台のVTR12に収録する。NTSC方式のビデオ信号は、1/30秒が1フレームとなっており、1フレームは奇数と偶数の2つのフィールドからなっているため、1つのVTRで3次元映像を記録する場合、図3に示すように、フィールド毎に右眼用、左眼用の映像信号を収録する。これを再生すると、1/60秒のスピードで右眼用の映像と、左眼用の映像が交互に映し出される。

【0010】 3次元映像は液晶シャッター付きのメガネで鑑賞する。図4に示すように、3次元変換器21からの切り換え信号 (20サイクル) を取り出し、ドライブ回路22により液晶シャッター付きメガネ20の左右のシャッターを切り換え駆動するもので、ダミーヘッドの左右のメガネ2で撮影した映像が重ねて観察され、その結果、観察者にとっては3次元カメラで撮影した実物体が仮想物体として3次的に観察される。

【0011】 2VTR方式は、2台のVTRでそれぞれ右眼用と左眼用の映像を収録するものであり、図5に示すように、右眼と左眼のカメラ2で撮影した映像を、タイムコードジェネレータ30で同期をとり、NTSCビデオ信号を右用と左用のVTR31、32で収録する。2VTR方式では、1VTR方式に比して高画質な収録

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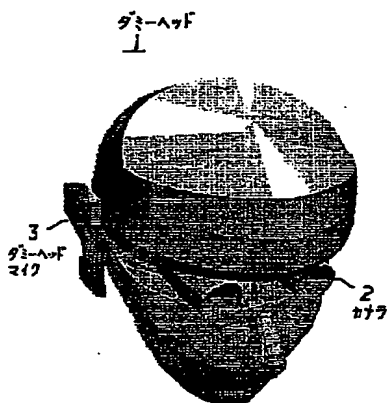
ができ、そのためオーディオ信号もタイムコードジェネレータ30でVTRと同期をとってDAT33に収録することにより、高音質なバイノーラルサウンドが得られる。また、2VTR方式で再生する場合は、2台のVTR、これらを同期させるシンクロナイザ、右眼用と左眼用とに映像を切り換えるスイッチ、メガネを動かすドライバ、及び前述した液晶シャッタ付きのメガネが必要となる。

【0012】次に、ダミーヘッドの一具体例について説明する。図6において、ダミーヘッド1はできるだけ人間に近い曲線で構成し、前部1aと後部1bとに割れて分離できるようになっていて、内部にはカメラを固定する固定部材が設けられる。カメラ間の距離（左右の眼の間隔）は6.2cmに固定し、角度だけ変えられるようにし、角度は決定した後は固定し、また、高さと前後の位置が変わらないように固定する。もちろん、カメラをスライド可能にしてカメラ間距離を調節可能にしてもよい。

【0013】図7はスライダタイプのカメラの例を示し、図7(a)は平面図、図7(b)は斜視図である。カメラ2は、三脚に取付けられた支持台7上の回転テーブル8上に載っていて、左右に対称にスライドするとともに、角度が変えられるようになっている。また、支持台7、回転テーブル8には目盛10が付されていてカメラ間の距離、角度が分かるようになっている。カメラ間の距離は2〜30cm程度まで調節可能で、上下と前後のズレが内容に固定される。また、コードの重みでぐらつくことがないように、ストッパー9で2箇所カメラを固定できる。そして、このようなカメラを図6に示すダミーヘッド内に取りつけられる。

【0014】

【図1】



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【発明の効果】以上のように本発明によれば、人間の眼、耳に対応する位置にそれぞれ3次元カメラ、ダミーヘッドマイクを取付けて立体録画とバイノーラル録音を同時立体収録するようにしたので、その場に居るのと同じ臨場感が得られ、より洗練された、完成度の高いリアリティの演出が可能となる。その結果、例えば、オペラやコンサートなどを客席の位置に本発明のシステムを設置して収録し、大画面に再生することにより、まるで自分が客席にいるかのような臨場感を味わうことができる。また、臨場感通信システムの画像・音響収録部に本発明を適用することにより、まるで本人を前にしたようなより自然なコミュニケーションが可能になる。また、ロボットなどの遠隔操作を行う場合、頭部に本発明のシステムを設置することにより、まるで自分がその場所にいるようなオペレーションが可能になる。

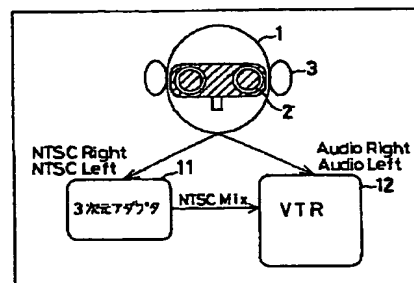
#### 【図面の簡単な説明】

- 【図1】 本発明のダミーヘッドの概念図である。
- 【図2】 1VTR方式を説明する図である。
- 【図3】 1VTR方式を説明する図である。
- 【図4】 液晶付きメガネを説明する図である。
- 【図5】 2VTR方式を説明する図である。
- 【図6】 ダミーヘッドの1具体例を示す図である。
- 【図7】 スライダタイプのカメラを説明する図である。

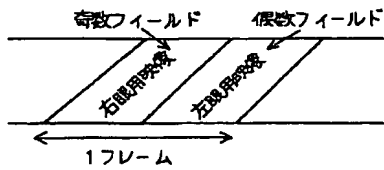
#### 【符号の説明】

1…ダミーヘッド、2…カメラ、3…マイク、4…ダミー耳介、5…コード、6…三脚、7…支持台、8…回転テーブル、9…ストッパー、10…目盛、11…3次元アダプタ、12、31、32…VTR、20…液晶シャッタ付きメガネ、21…3次元変換器、22…ドライブ回路。

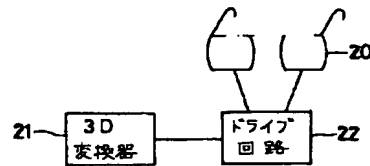
【図2】



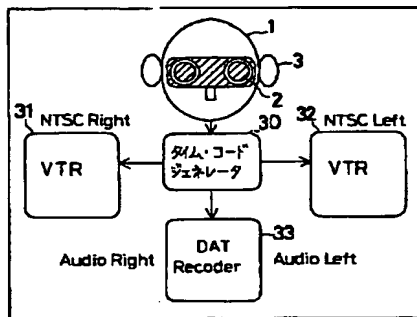
【図3】



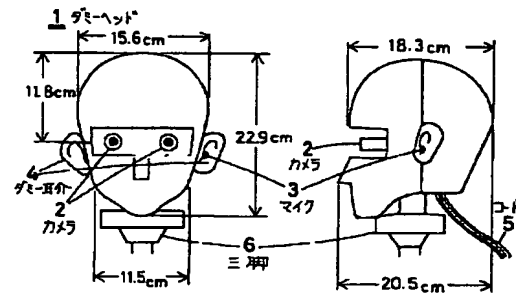
【図4】



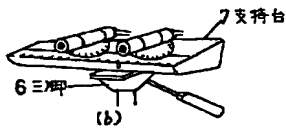
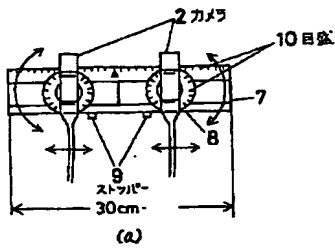
【図5】



【図6】



【図7】



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(71)Applicant : NORO KAGEISA

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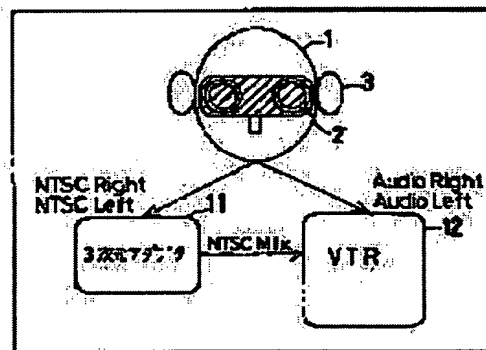
(72)Inventor : NORO KAGEISA  
KAWAI TAKASHI

## (54) HEAD MOUNTING TYPE VIDEO AND AUDIO SIMULTANEOUS THREE-DIMENSIONAL RECORDING SYSTEM

## (57)Abstract:

**PURPOSE:** To record video and sound simultaneously and stereoscopically so that the same presence with an actual site can be obtained by fitting a three-dimensional camera and dummy head microphones at positions corresponding to the eyes and ears of a human being, and simultaneously and three-dimensionally performing stereoscopic video recording and binaural sound recording.

**CONSTITUTION:** A dummy head 1 is so constituted as to perform the stereoscopic video recording and binaural sound recording from the human-oriented view point. For that purpose, the cameras 2 are fitted at the positions of the right and left eyes of a head 1 modeled on the head and face of the human being and the dummy head microphones 3 are fitted at the positions of the right and left ears; and they are integrated to constitute the system. The cameras 2 are fitted at the positions of the right and left eyes so as to obtain a parallax and consist of three-dimensional cameras which take pictures alternately in cycles enabling continuous recognition by means of the after image phenomenon, e.g. 20 cycles, and record images on a magnetic tape, etc. This constitution enables the simultaneous stereoscopic video recording and binaural sound recording.



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[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

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[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

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[Claim(s)]

[Claim 1] The head mold image and sound coincidence solid inclusion system characterized by having attached the dummy head microphone in the location of human being's face and the eye of right and left of the dummy head modeled on the head for the three-dimension camera possible [ include-angle accommodation ] at least in the location of a lug on either side, respectively, having carried out 3-dimensional scenography with the three-dimension camera, and carrying out coincidence inclusion of the sound with a dummy head microphone.

[Claim 2] The head mold image and sound coincidence solid inclusion system characterized by recording an image and sound by 1VTR method or 2VTR methods in a system according to claim 1.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to a head mold image and a sound coincidence solid inclusion system.

[0002]

[Description of the Prior Art] Attentions have gathered for the presentation method (solid presentation) more near human being's consciousness with the directivity to which current media technology and the presentation method of an image or sound aim at improvement in qualitative of Hi-Vision, DAT (Digital Audio Tape), etc. The technology with such orientation is named a virtual reality generically, and, generally is being established. It can be said because it is becoming a criterion to use a solid presentation technique for a presentation or a demonstration that the EKII vision which used the solid presentation technique for almost all the amusement parks and theme park can be found.

[0003]

[Problem(s) to be Solved by the Invention] However, although the presentation technique is progressing quickly, in order to make software, the present condition is having to use very expensive and special inclusion equipments. Although the three-dimension camera which can carry out solid inclusion only of the image, and the dummy head microphone which can carry out solid inclusion only of the sound exist, there is no system which can carry out solid inclusion of an image and the sound at coincidence so that presence equal to being on that occasion until now may be obtained.

[0004] This invention is for solving the above-mentioned technical problem, and it aims at offering the head mold image and sound coincidence solid inclusion system in which coincidence solid inclusion of an image and sound is possible so that presence equal to being on that occasion may be obtained.

[0005]

[Means for Solving the Problem] Therefore, the head mold image and sound coincidence solid inclusion system of this invention attach a dummy head microphone in the location of human being's face and the eye of right and left of the dummy head modeled on the head for a three-dimension camera possible [ include-angle accommodation ] at least in the location of a lug on either side, respectively, and is characterized by having carried out 3-dimensional scenography with the three-dimension camera, and carrying out coincidence inclusion of the sound with a dummy head microphone.

[0006]

[Function] Presence equal to being in the location corresponding to the eye of right and left of human being on that occasion with the dummy head which attached the microphone in the location corresponding to a lug on either side for a three-dimension camera, respectively, since it was made to carry out coincidence solid inclusion of a solid image transcription and the binaural sound recording is obtained, and the production of a highly complete reality of this invention refined more is attained.

[0007]

[Example] The conceptual diagram of the dummy head whose drawing 1 is one example of this invention, the block diagram with which drawing 2 explains the system configuration of 1VTR inclusion method, drawing where drawing 3 explains the 1VTR inclusion approach, and drawing 4 are drawings explaining glasses with a liquid crystal shutter. As for a dummy head and 2, one is [ a camera and 3 ] dummy head microphones among drawing. It is made to perform solid image transcription and binaural sound recording from the view of a human core, therefore a camera 2 is attached in the location of human being's head and the eye of right and left of the head 1 produced by imitating a face, a dummy head microphone is attached in the location of a lug on either side, and the dummy head 1 serves as a system which made these unify.

[0008] A camera 2 is formed in the location of an eye on either side, in order to give parallax, it switches and photos right and left with the period which can be continuously recognized according to an after-image phenomenon, for example, 20 cycles, and consists of a three-dimension camera recorded on a magnetic tape etc. Moreover, a dummy head microphone is formed in the location of a lug on either side, and has come to be able to carry out binaural sound recording.

[0009] There are 1VTR and 2VTRs as an inclusion method. 1VTR obtains an audio signal from the dummy head microphone 3 on either side while it is photoed with the camera 2 of right and left of a dummy head 1 and acquires the video signal of NTSC system on either side, as shown in drawing 2. And a video signal is synchronized with an audio signal through the three-dimension adapter 11, and it records on one set of VTR12. As for the video signal of NTSC system, 1 / 30 seconds are one frame, and since one frame consists of the two fields, odd number and even number, when recording a 3D scenography with one VTR, as shown in drawing 3, the video signal for the object for right eyes and left eyes is mentioned in it for every field. If this is reproduced, the image for right eyes and the image for left eyes will project by turns at the speed for 1 / 60 seconds.

[0010] A 3D scenography is appreciated with glasses with a liquid crystal shutter. As shown in drawing 4, the switch signal (20 cycles) from the three-dimension transducer 21 is taken out, and the shutter of right and left of the glasses 20 with a liquid crystal shutter is switched by the drive circuit 22, it drives, and the image photoed with the glasses 2 of right and left of a dummy head is observed in piles, consequently the real object photoed with the three-dimension camera is observed in three dimension as a virtual body for an observer.

[0011] The image the object for right eyes and for left eyes is mentioned in 2VTR methods by two sets of VTRs, respectively, as shown in drawing 5, they take a synchronization for the image photoed with the camera 2 of a right eye and a left eye with the time code generator 30, and an NTSC video signal is mentioned in them with VTRs 31 and 32 the object for right, and for left. being able to perform high definition inclusion as compared with 1VTR method, therefore taking VTR and a synchronization also for an audio signal with the time code generator 30 by 2VTR methods, and recording on DAT33 -- high -- a tone quality binaural sound is obtained. Moreover, when reproducing by 2VTR methods, glasses two sets of VTRs, the synchronizer which synchronizes these,

SUICHI which switches an image to the object for right eyes and left eyes, the driver which moves glasses, and with the liquid crystal shutter mentioned above are needed.

[0012] Next, one example of a dummy head is explained. In drawing 6, a dummy head 1 is constituted from a curve near human being as much as possible, it is divided into anterior part 1a and posterior part 1b, and can dissociate now, and the holddown member which fixes a camera is prepared in the interior. The distance between cameras (spacing of an eye on either side) is fixed so that it may fix after fixing to 6.2cm, changing only an include angle and determining an include angle, and height and the location of order may not change. A slide of \*\*\*\*\* and a camera is enabled, and it is good even if accommodation of the distance between cameras is possible.

[0013] Drawing 7 shows the example of a slider type camera, drawing 7 (a) is a top view and drawing 7 (b) is a perspective view. A camera 2 is \*\*\*\*\* so that an include angle may be changed, while appearing on the rotary table 8 on the susceptor 7 attached in the tripod and sliding to right and left at the symmetry. Moreover, the graduation 10 is given to susceptor 7 and a rotary table 8, and the distance between cameras and an include angle are known. The distance between cameras can be adjusted to about 2-30cm, and the upper and lower sides and gap [ before and after ] are fixed to the contents. Moreover, a camera is fixable by two places with a stopper 9 so that it may not be shaky by the weight of a code. And it is attached in the dummy head which shows such a camera to drawing 6.

[0014]

[Effect of the Invention] Since a three-dimension camera and a dummy head microphone are attached in the location corresponding to human being's eye and a lug, respectively and it was made to carry out coincidence solid inclusion of a solid image transcription and the binaural sound recording according to this invention as mentioned above, presence equal to being on that occasion is obtained, and the production of a highly complete reality refined more is attained. Presence as if he was in the seat for audience completely can be tasted by installing the system of this invention in the location of a seat for audience, recording on it as a result, for example, opera, a concert, etc., and reproducing to a big screen. Moreover, more natural communication which was completely made into the front [ he ] is attained by applying this invention to the image and the sound inclusion section of a realistic sensations communication system. Moreover, when operating a robot etc. by remote control, operation whose one is in the location completely becomes possible by installing the system of this invention in a head.

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[Translation done.]

\* NOTICES \*

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- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the conceptual diagram of the dummy head of this invention.

[Drawing 2] It is drawing explaining 1VTR method.

[Drawing 3] It is drawing explaining 1VTR method.

[Drawing 4] It is drawing explaining glasses with liquid crystal.

[Drawing 5] It is drawing explaining 2VTR methods.

[Drawing 6] It is drawing showing one example of a dummy head.

[Drawing 7] It is drawing explaining a slider type camera.

[Description of Notations]

1 [ -- A dummy ear pinna, 5 / -- A code, 6 / -- A tripod, 7 / -- Susceptor, 8 / -- A rotary table, 9 / -- A stopper, 10 / -- A graduation, 11 / -- A three-dimension adapter, 12 31, 32 / -- VTR, 20 / -- Glasses with a liquid crystal shutter, 21 / -- A three-dimension transducer, 22 / -- Drive circuit. ] -- A dummy head, 2 -- A camera, 3 -- A microphone, 4

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[Translation done.]

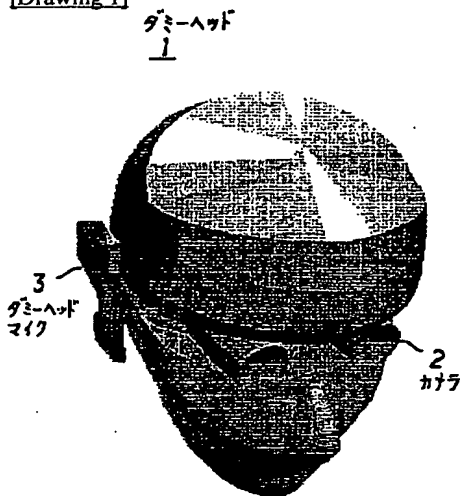
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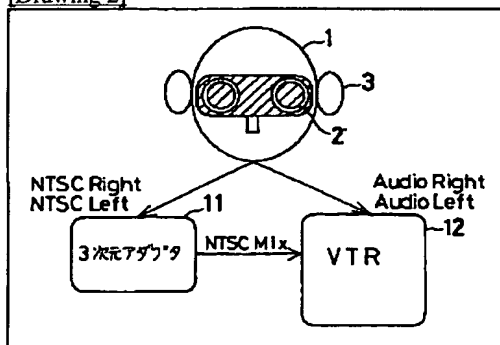
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3. In the drawings, any words are not translated.

## DRAWINGS

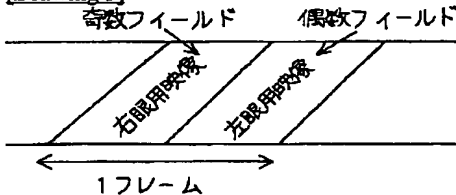
[Drawing 1]



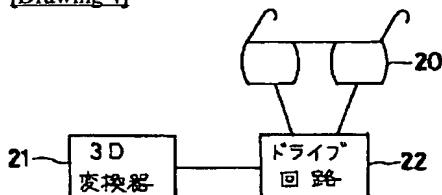
[Drawing 2]



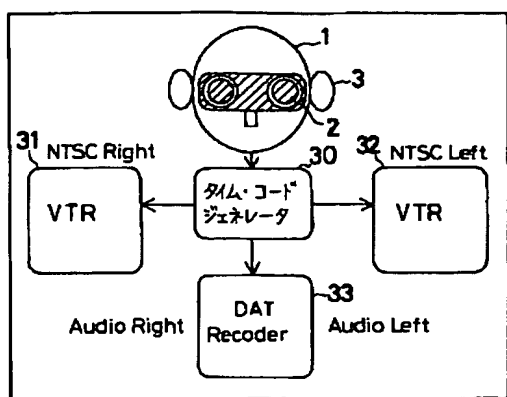
[Drawing 3]



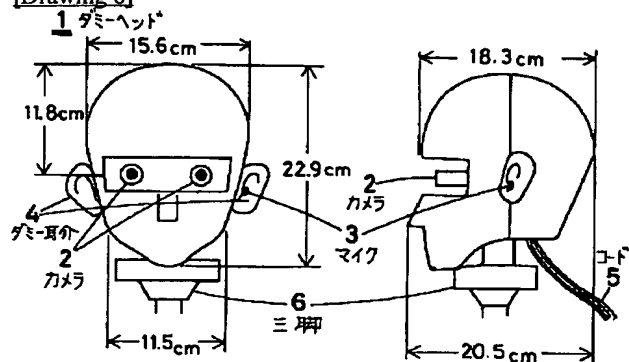
[Drawing 4]



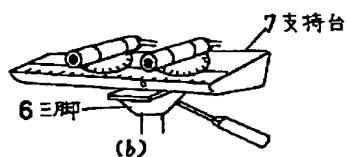
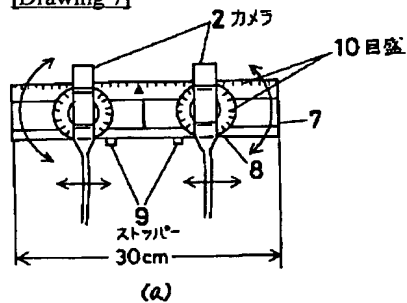
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]